February to April 2024 Outlook: Perspective for the Lower Rio Grande Valley/Deep S. Texas Region

NATIONAL WEATHER SERVICE

January 26, 2024

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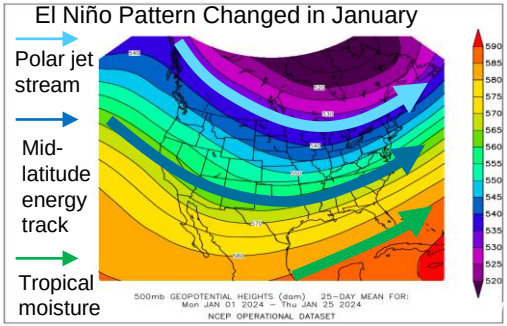
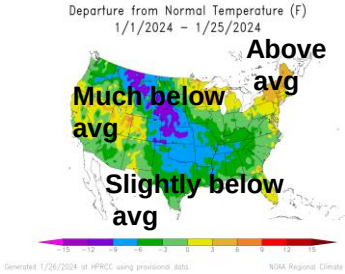
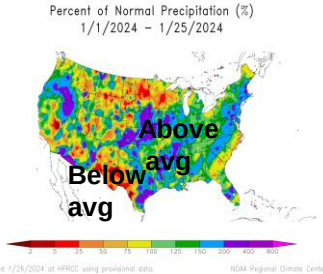
Forecast Trends Uncertain; Equal Chances for Wet or Dry, Warm or "Cool"

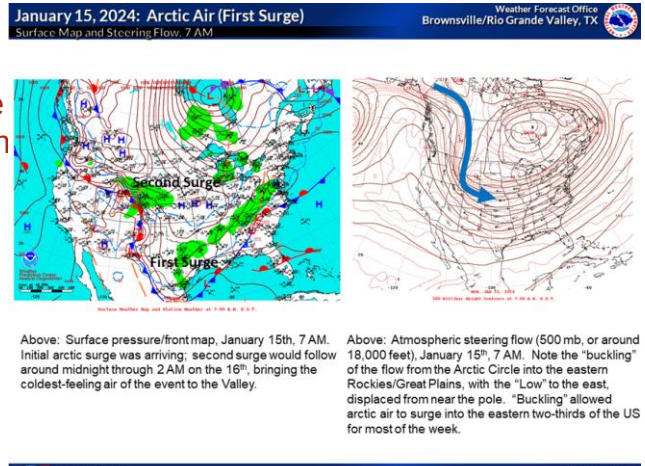






January 2024: Arctic Outbreak Turned Warm to Cool

- **El Niño's** pattern took a hiatus; polar jet "buckled" the second week of the month (right) and bitter cold reached the central/eastern U.S. with a hard freeze down to the Rio Grande Valley. Pattern returned for the final week of the month
- **Rainfall was a mixed bag.** Post-freeze rainfall pushes monthly totals to or above average for some; upper Valley/Rio Grande Plains on the drier side.
- **Freeze/Hard Freeze, then Cold Rain,** pushes temperatures a little below average. A generally warm start and mild end are not enough to counter mid-mongh near-record cold.
- Despite much above average rainfall in east Texas, limited rainfall across inflow regions to Falcon and Amistad reservoir kept them at record low levels (combined) for January.

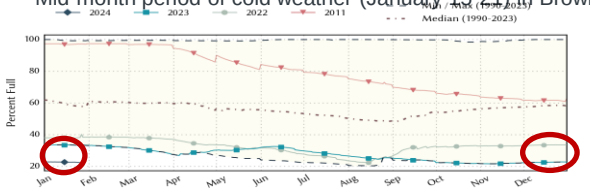


Above: Surface pressure/front map, January 15th, 7 AM. Initial arctic surge was arriving; second surge would follow around midnight through 2 AM on the 16th, bringing the coldest-feeling air of the event to the Valley.

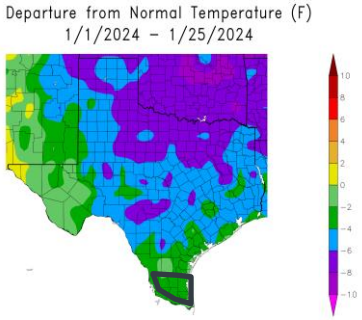
Above: Atmospheric steering flow (500 mb, or around 18,000 feet), January 15th, 7 AM. Note the "buckling" of the flow from the Arctic Circle into the eastern Rockies/Great Plains, with the "Low" to the east, displaced from near the pole. "Buckling" allowed arctic air to surge into the eastern two-thirds of the US for most of the week.

2024-01-15	68	32	50.0	-12.5
2024-01-16	41	29	35.0	-27.6
2024-01-17	56	37	46.5	-16.1
2024-01-18	77	53	65.0	2.3
2024-01-19	65	54	59.5	-3.3
2024-01-20	54	44	49.0	-13.9
2024-01-21	50	46	48.0	-15.0

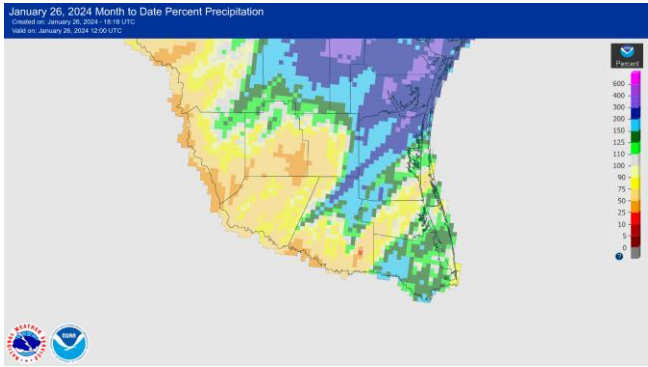
Mid-month period of cold weather (January 15-21) in Brownsville



Texas share of Amistad, Falcon, Red Bluff Reservoirs. Credit: Texas Water Development Board

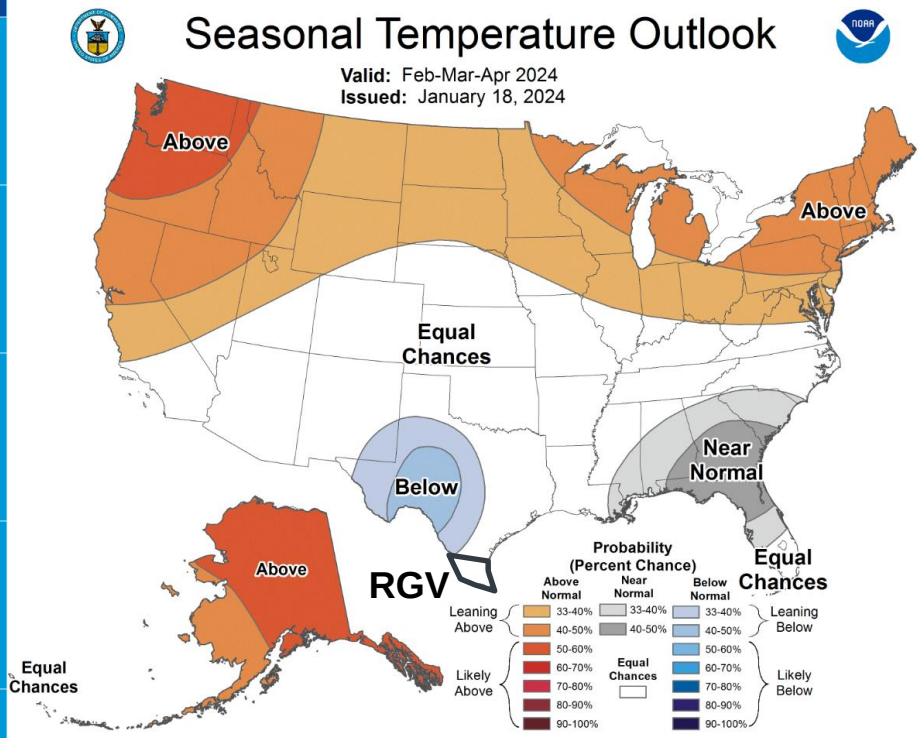


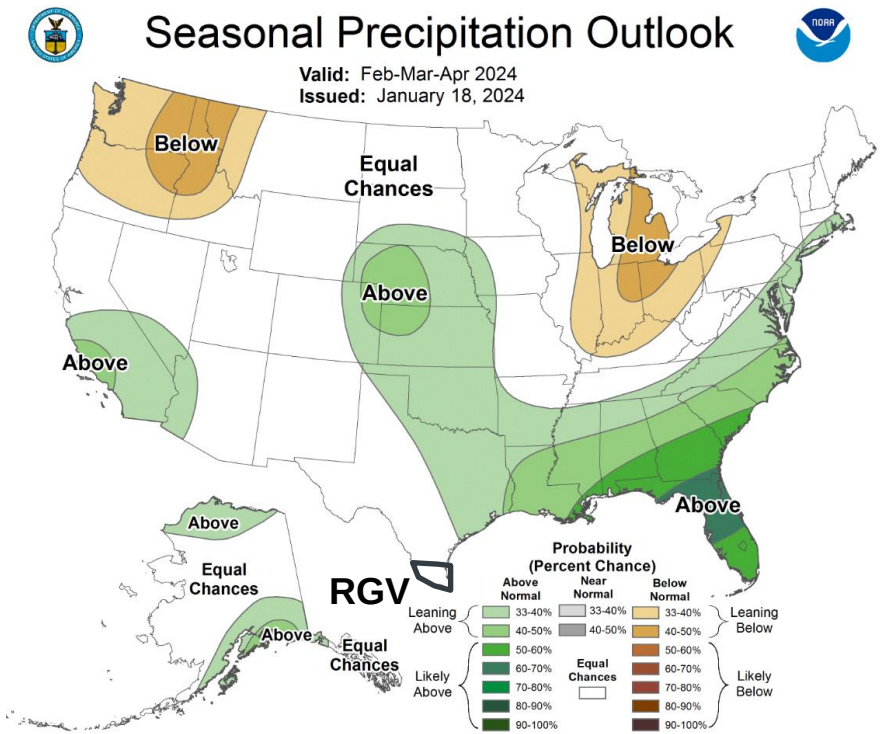
January 1-25 departure from 1991-2020 average temperature. For the RGV, generally 1 to 2.5°F below average, but much Colder across central and north/east Texas.



January 1-25 percentage of average rainfall. Generally above average for the lower/mid Valley north through Kenedy, but drier across the upper Valley/Brush Country/Rio Grande Plains.

Seasonal Forecast, February – April 2024 USA





Key Takeaways: February – April 2024

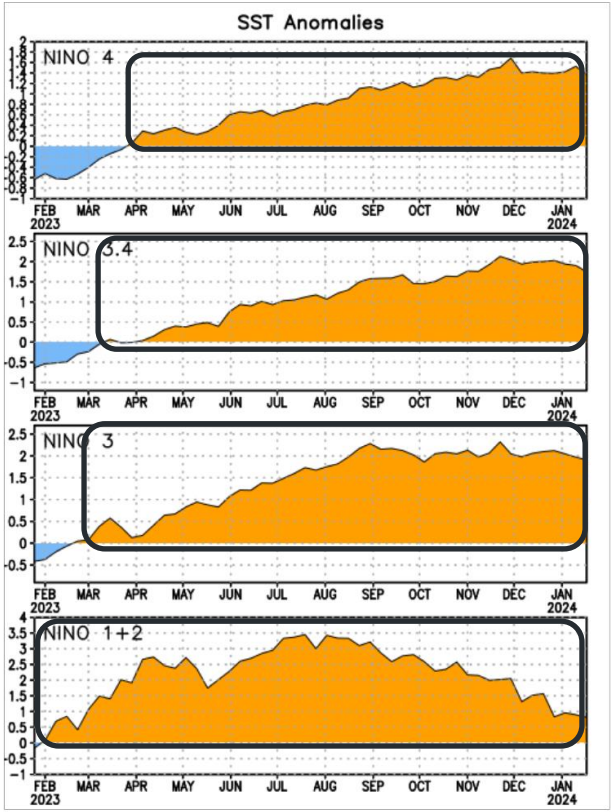
- Confidence is **low-medium** on rainfall outcomes, and **low-medium** on temperature outcomes. There is still some uncertainty on the prevailing (average) signal that could enhance rainfall, or hold it back, despite the last of the strong El Niño. Confidence is also **medium** on **dryness or possible moderate drought** redevelopment by late winter/early spring and beyond. Additional light to moderate rain events similar to November-late January would keep drought/dryness out.
  - Reservoir levels at Falcon remained steady in January, but only slightly above **record lows for these dates** – values not seen since early 2003 and 2023. Amistad, and the Rio Grande overall, remain at record seasonal lows. Inflows from additional rainfall would slowly increase reservoir levels; conversely, dry and warm periods could maintain modest evaporation rates through March, accelerating in April **Confidence is near-certain on levels remaining near record lows through at least March**.
  - El Niño influences combined with other "teleconnections" between oceans and atmosphere will **determine the eventual "sense" of late winter through mid-spring**. There are equal chances for **helpful rains** for the Valley's detention/drainage system – less for the reservoir inflow region – and for **renewed dryness**. Confidence is **low-medium** on either outcome.
  - **Stage 2 and 3 water conservation continued in several RGV municipalities in late January. Status quo is likely through March,** and could worsen by April if the rains don't come.
  - **Will it freeze again?** Through February 15th, no freezes are expected for the region. Chances are very low from February 15th through early March, but we cannot rule out one more lesser freeze in this window, favoring the Brush Country/Rio Grande Plains. **Low wind chill** (**apparent temperature at or below 30ºF**) **may occur one more time**.
  - **Severe Weather (hail, wind, flooding)** could arrive in March and continue in April, but confidence is low.
  - 90° days should arrive in March, and become more frequent in April – especially if the month is dry.

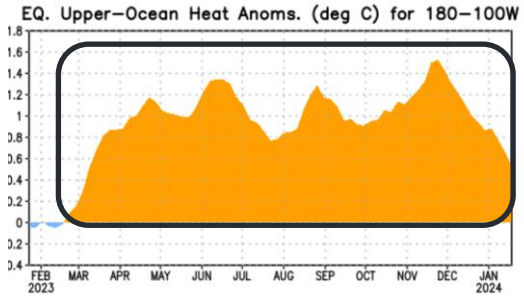
The "Why" of the Forecast: El Niño to remain strong; uncertain late winter/mid spring temperatures and rainfall

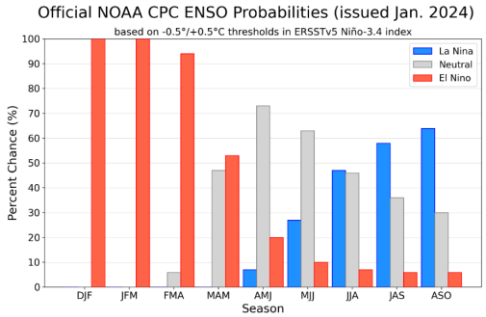
Year	DJF	JFM	FMA	MAM	AMJ	MJJ	JJA	JAS	ASO	SON	OND	NDJ
2021	-1.0	-0.9	-0.8	-0.7	-0.5	-0.4	-0.4	-0.5	-0.7	-0.8	-1.0	-1.0
2022	-1.0	-0.9	-1.0	-1.1	-1.0	-0.9	-0.8	-0.9	-1.0	-1.0	-0.9	-0.8
2023	-0.7	-0.4	-0.1	0.2	0.5	0.8	1.1	1.3	1.6	1.8	1.9	

- El Niño maintained an active subtropical jet into January, **but a temporary southward shift due to arctic air briefly reduced its impact between January 12 and 21**. Heavy rainfall returned in Texas north and northeast of the RGV.
- Should heavy rainfall events reappear – most likely from mid February through March if the pattern sets up favorably – **this could help local water supplies.**
- An infrequent pattern like November 10-14 – or return to relative dryness – would eventually bring abnormal dryness or even moderate drought back to some areas.
- El Niño is **forecast to rapidly weaken/end** by mid to late spring.

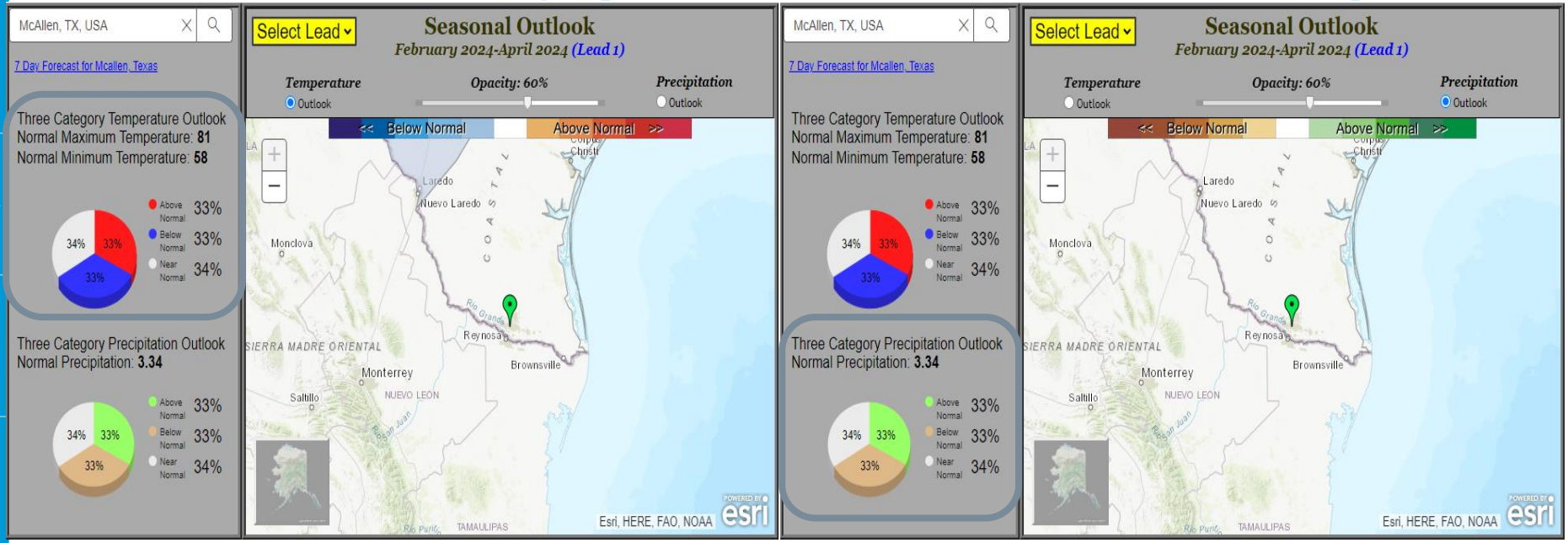
*Above right: Oceanic Niño Index. Values below -0.5 (**light blue**) for five consecutive 3-month periods indicated La Niña. El Niño (**red,** +0.5) officially began in April-June 2023, reached strong levels (1.5) by August-October 2023, and strengthened further for September-November.





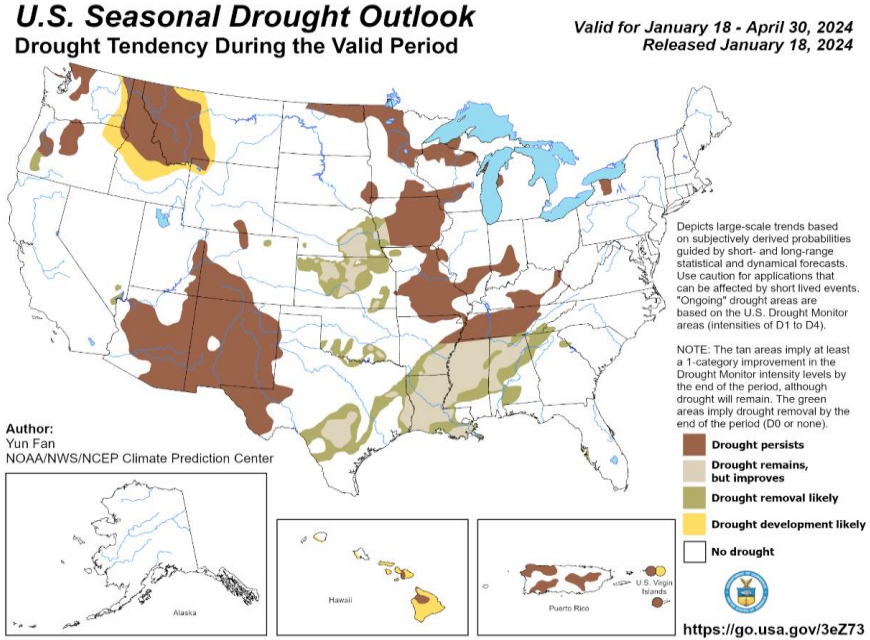


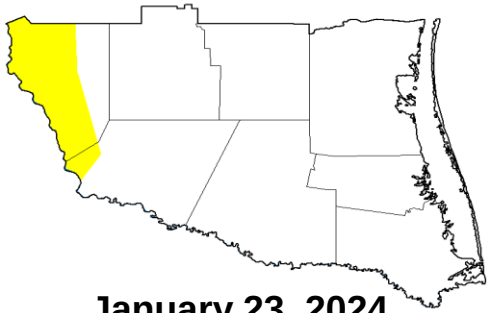
The February-April 2024 Outlook:
Rio Grande Valley (McAllen as Anchor Point)



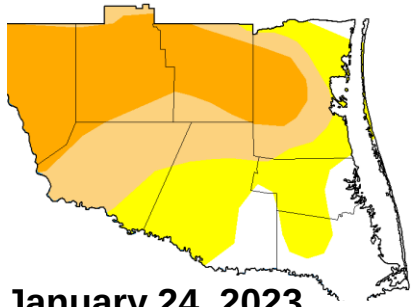
- Temperature: **Equal chances for above, below, and average**: RGV averages: Afternoon – Low-Mid 70s in early February, rising to the upper 80s by late April. Wake-up: 50-55 in early February, rising to 65-70 by the end of April
- Precipitation: **Equal chances for above, below, and average**. RGV averages: 3 (west) to 5 (east) inches.

The Februry-April 2024 “Droughtlook”

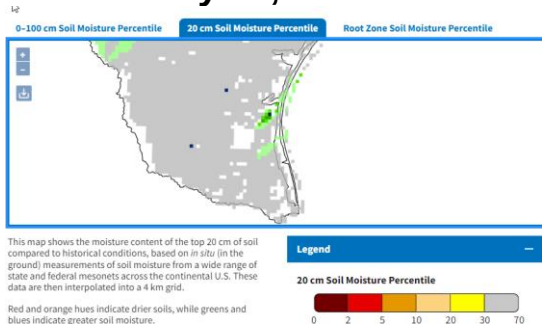




January 23, 2024

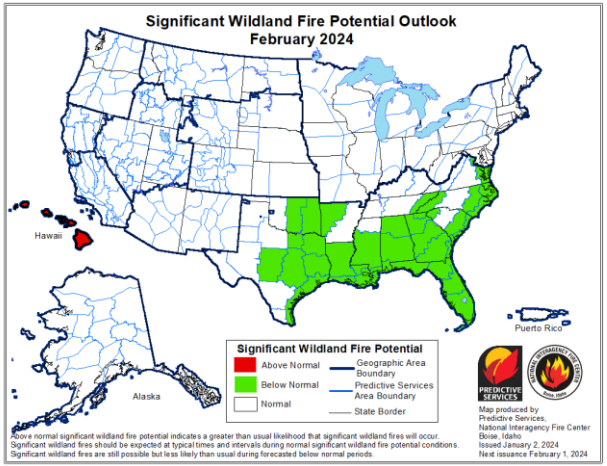


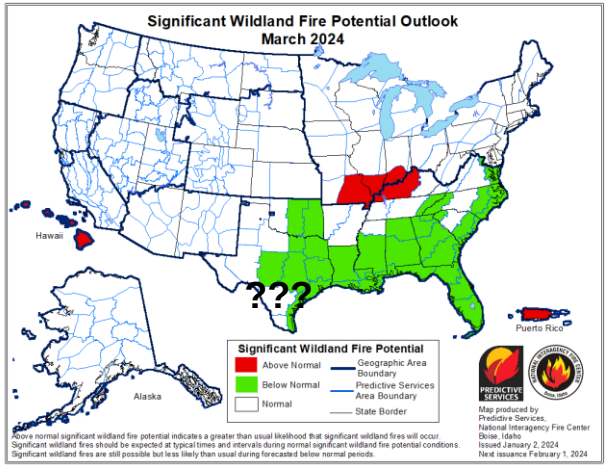
January 24, 2023

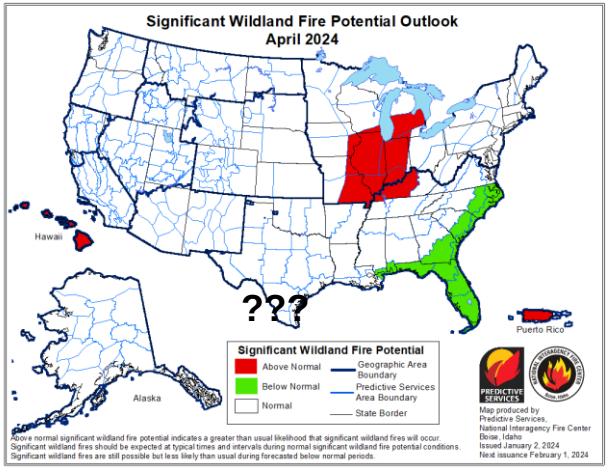


- **Dryness returned to Zapata County in late January.** However, 4” (depth) Soil moisture was generally at 30-70% of average for much of the Valley’s crop-growing regions (Hidalgo/Cameron) with a few pockets of >70% in Kenedy County. Note: the freeze/hard freeze of January 15-17 “cured” all grasses and brush.
- **Late winter-mid spring remains uncertain** as upper level disturbances may bring occasional “coverage” rain events with fronts and/or tropical moisture feeds, especially in February and early March. Thereafter, warmer and drier weather could return, ensuring dryness and moderate drought (level 1 of 4) return. Severe (level 2) Drought cannot be ruled out by April if dry/warm conditions dominate.

Wildfire Spread Potential Should Remain in Check in Early 2024







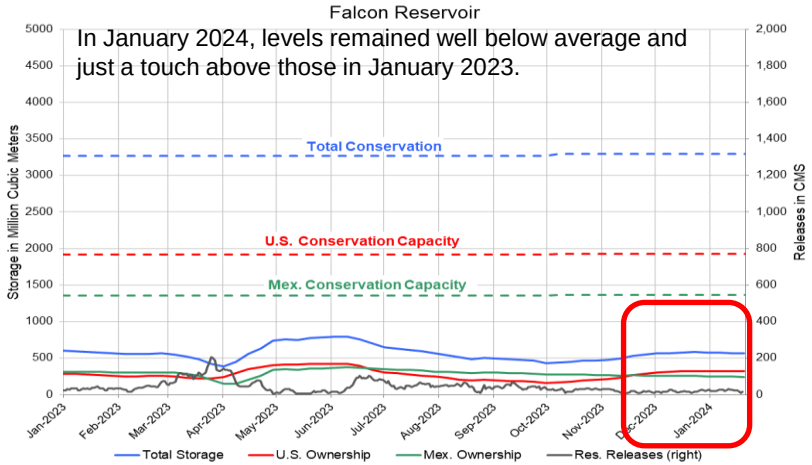
Low to moderate grass fuel loads are common across many areas. The January 15-17 freeze/hard freeze cured all grasses and most brush, which continued through the end of January. Fuels would "uncure" in February, **if rainfall occurs and is joined by high humidity**/warmer temperatures.

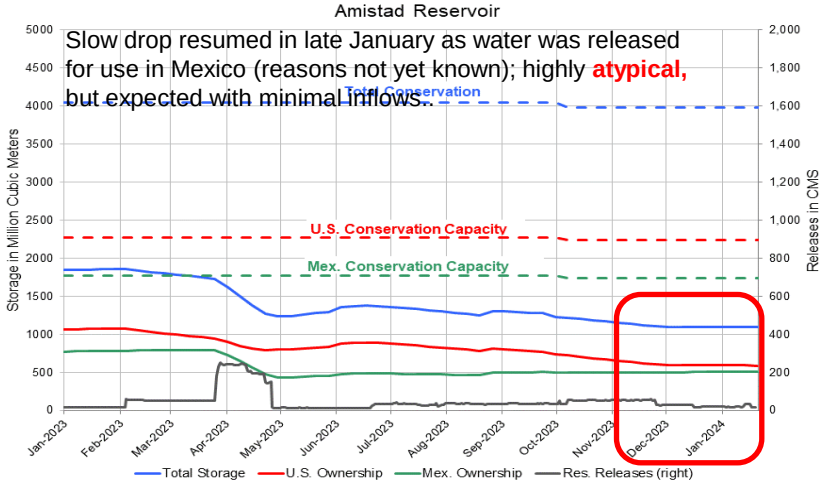
No issues are expected in February due to continued low evaporation and a forecast for mainly "seasonable" temperatures and the potential for "just in time" rainfall.

While the forecast shown indicates **below average fire spread potential** in March, **uncertainty is low to medium on this outcome** and based on whether there is sufficient rainfall (or not), and potential drying. There are **equal chances that March could be warmer and drier than average, which would change this forecast**.

Any dryness/drought in March, combined with wind and warmth, could **nudge potential to above average as early as mid-late March**. **A warm, dry, and windy April could increase the threat of rapid wildfire spread.**

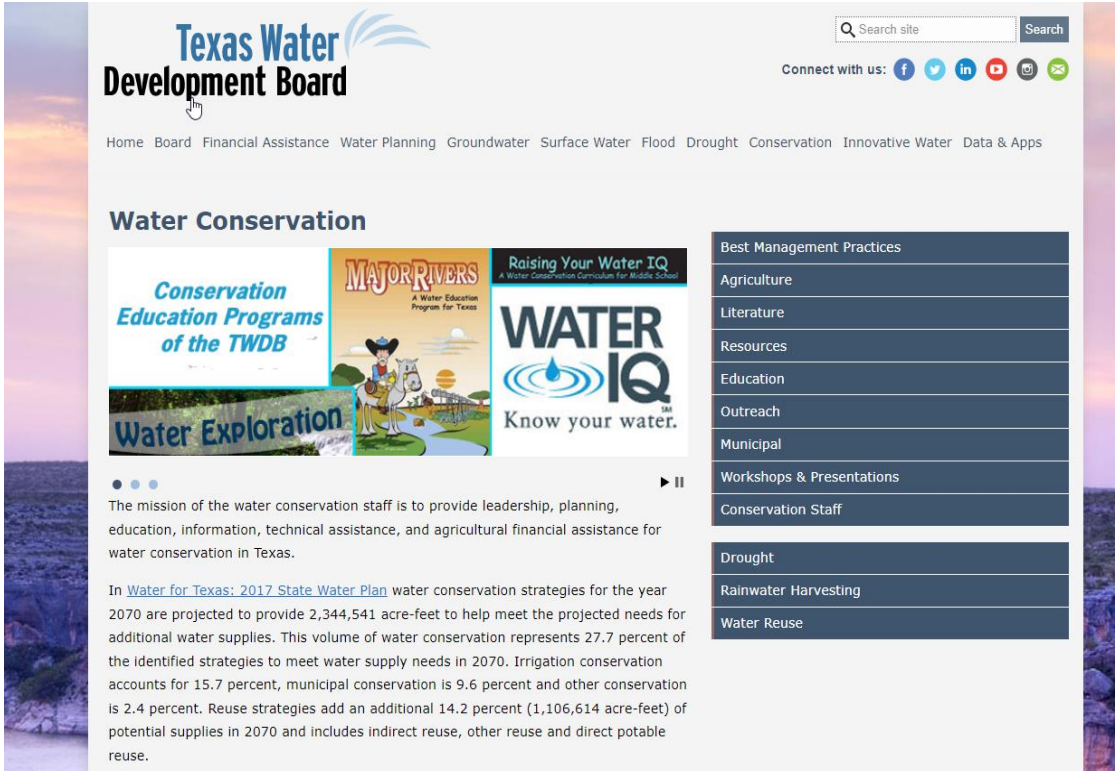
Amistad remained at Record Seasonal Lows; Falcon Steady





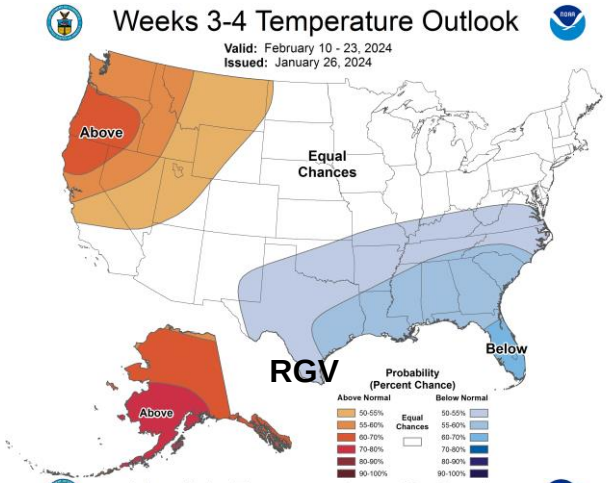
- Minimal inflows in January held Falcon steady (**17.5%** on January 26th vs. **17.7%** on December 22nd). This level was slightly above record lows for this date, but only a touch above 30-year lows. The potential for additional El Niño-induced rains remained unknown, so a potential rise to **near 20 percent in February** is only possible with upstream releases from Amistad, which were underway for an unknown period of time on January 23-26. **March** rains remain highly uncertain – **should thunderstorms develop over the Sierra Madre and help inflows, rises could increase further**. **Without these storms, increasing evaporation rates could actually drop/hold levels in the upper teens**. **A warm/dry April would reduce values even more.**
- Amistad was steady, but releases in late January targeted for Mexico use brought levels , **down to 26.3%** on January 25 (down from **27.2%** on December 22). Still **extremely (and record) low**. El Niño-induced rains may continue to miss this reservoir and inflow regions into early spring, **leaving levels well below 30 percent.**

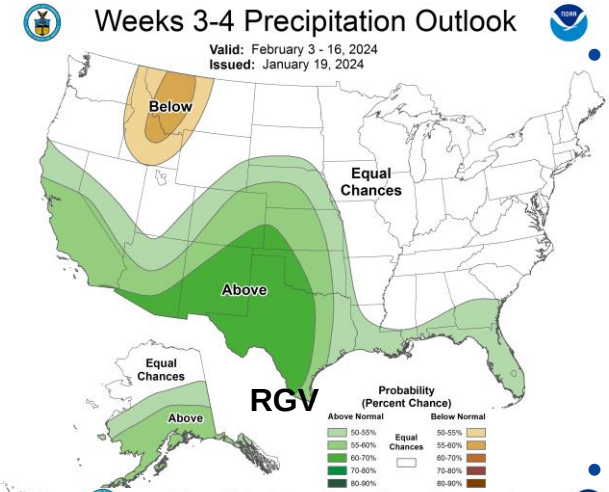
Water Conservation is Key Until Further Notice!

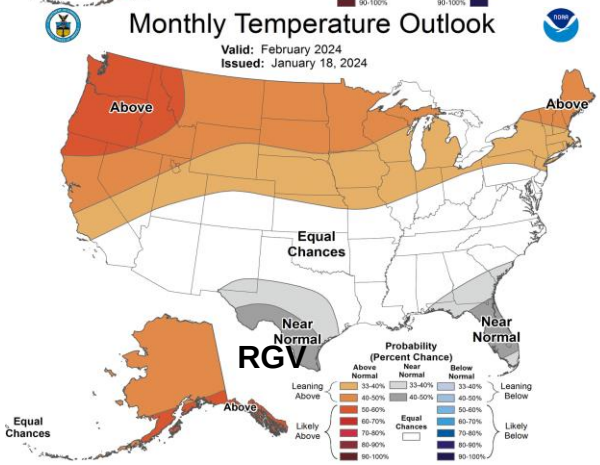


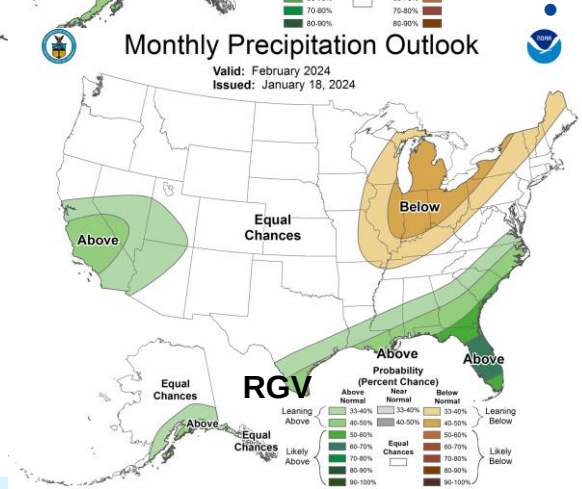
- "Stage 2" Restrictions continued through early winter and are likely to continue through at least March, based on inflows from Amistad and Falcon.
- Learn more at the Texas Water Development Board's Conservation Page

February 2024: Confidence: Medium-High on Average Temperatures; Low-Medium on Rainfall





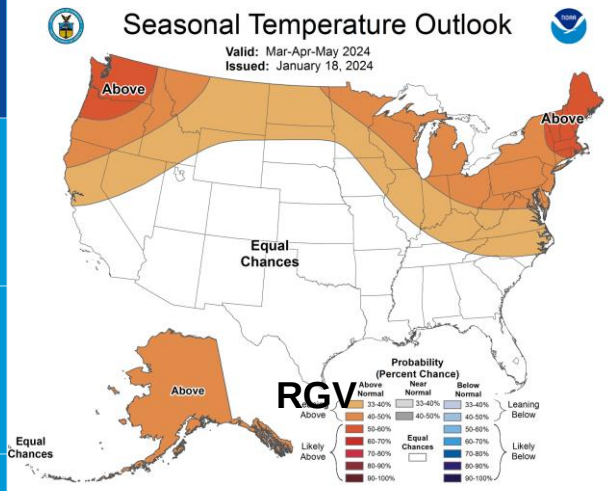


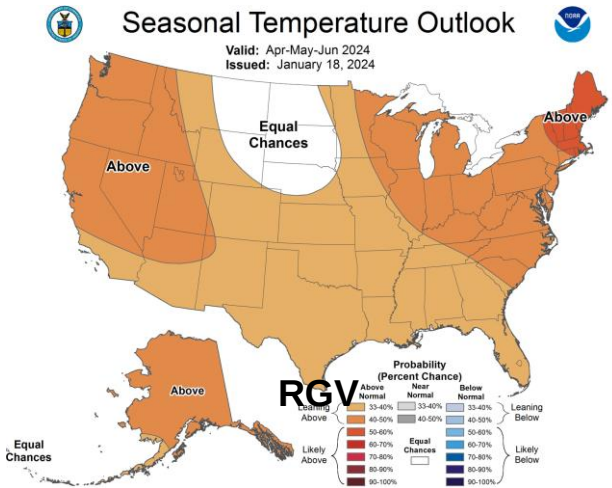


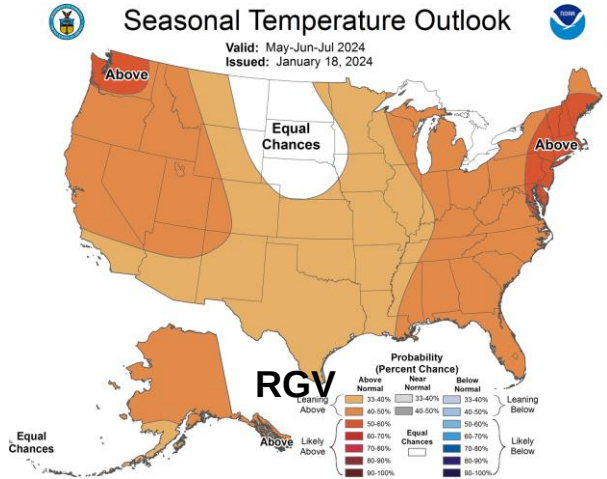
Bottom Line: The pattern will remain changeable, with more fronts and the potential for light to moderate rain events interspersed with warm and sunny periods. The probability of much colder air from the western Canadian prairies/arctic region has reduced, but a short-duration instance in late February or early March cannot be ruled out.

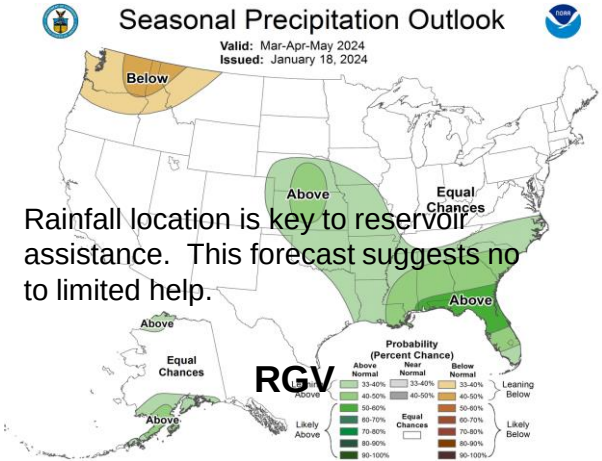
Confidence is **low-medium for** rainfall in February for the RGV. Rain events associated with upper level disturbances in the southern jet stream that tap the rich tropical moisture of the eastern tropical Pacific **could quickly push values above monthly averages** (Around 1 inch), while stronger fronts could push moisture away and be **followed by up to ten days of dry air, reducing monthly rain to below average.**

Spring through Early mid-Summer 2024: Uncertain on Early Wetness; Dryness and Heat now Likely Late

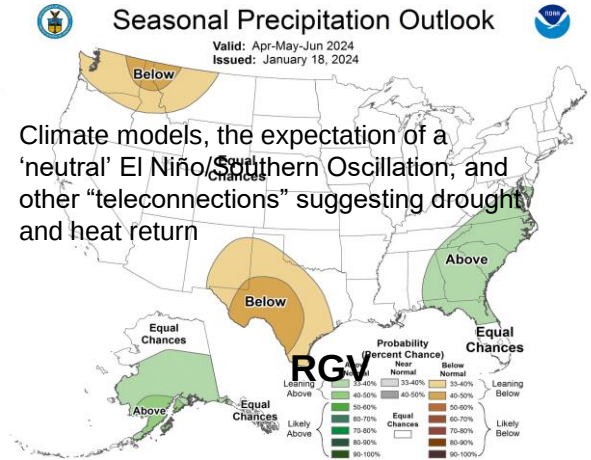




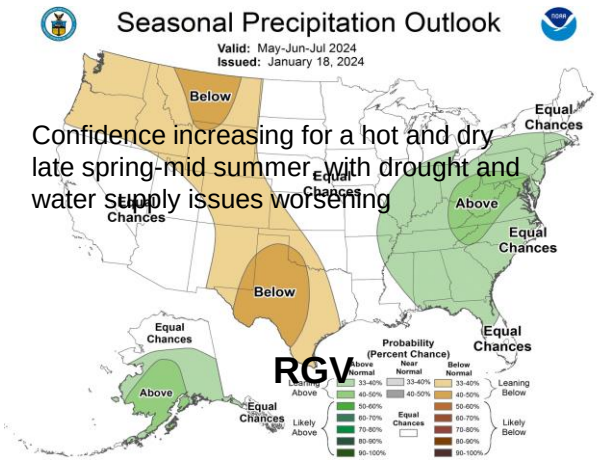




Rainfall location is key to reservoir assistance. This forecast suggests no to limited help.

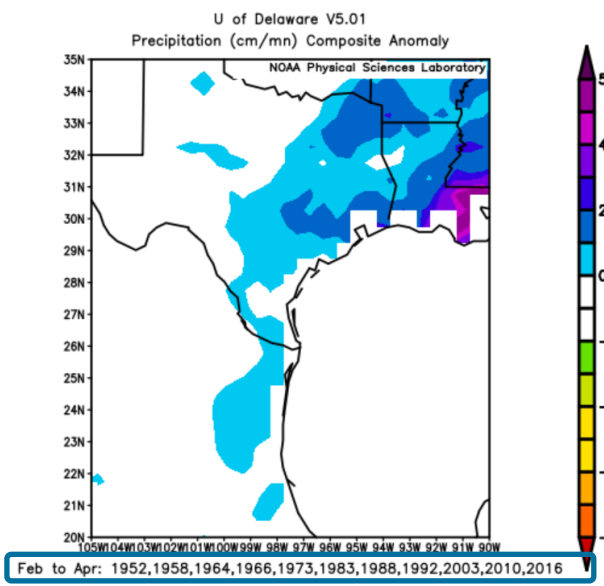


Climate models, the expectation of a 'neutral' El Niño/Southern Oscillation, and other "teleconnections" suggesting drought and heat return

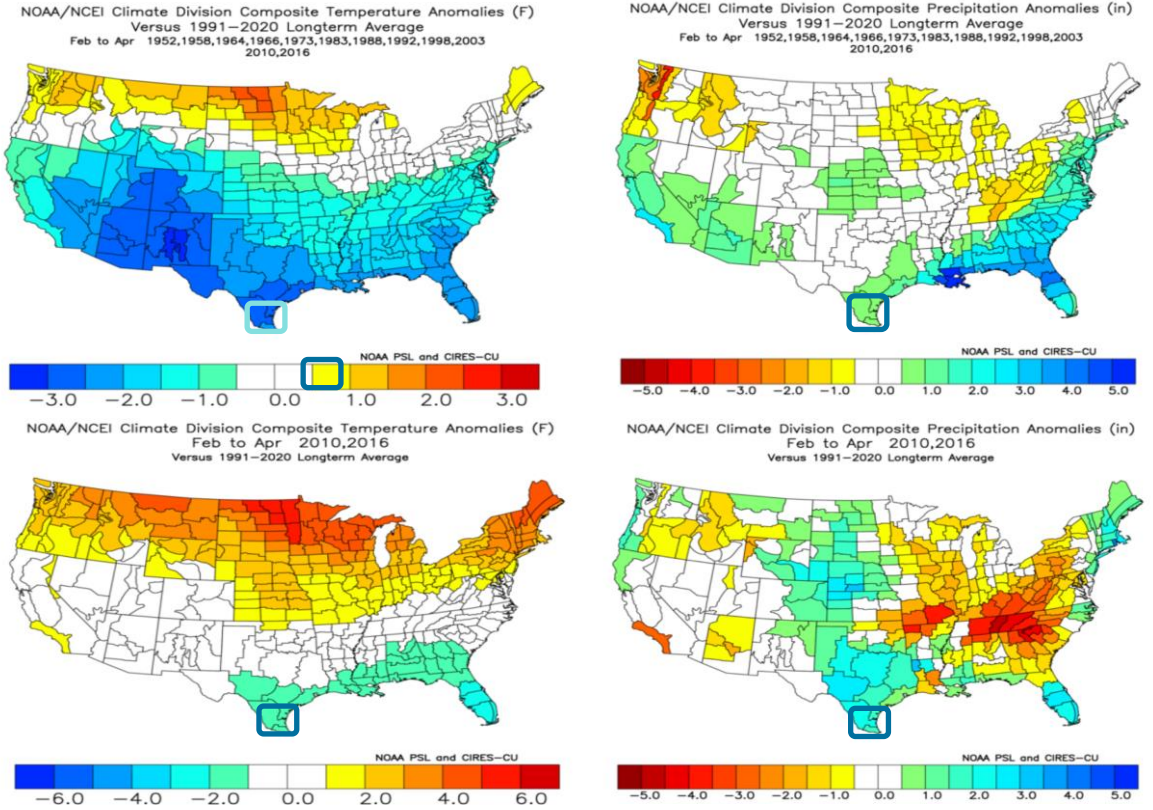


Confidence increasing for a hot and dry late spring-mid summer, with drought and water supply issues worsening

Comparing Similar El Niño Episodes; February-April Periods



Composite departure from average rainfall for years where the Oceanic Niño Index (ONI) increased to moderate (1 to 1.4), strong (1.5 to 1.9), or "super" (≥2.0) levels prior to the February-April window. Cutoff of rainfall on the coast is a map (mask) issue; the anomaly extends to the coast**. Note that conditions may "flip" rapidly toward neutral, making these comparisons fleeting by April.**



- **Top:** Composite temperature (left) and precipitation (right) anomalies for moderate/strong/"super" El Niños leading into February-April, since 1950.
- **Bottom:** Same, except for most recent cases (2009/10 and 2015/16).

Bottom Lines

- Sufficient inflows from Mexican reservoirs serving the Lower Rio Grande watershed remain unlikely during the February-April 2024 period. **Combined share of water in Amistad and Falcon now likely to continue at or below Stage 2 triggers (25% or less) through April.** Water **conservation, smart irrigation , and rainwater harvesting** are critical actions to continue.
- **Drought Improvements should hold through February across the RGV and Brooks/Kenedy ranches.** Future evolution into March will depend on rainfall directly on the RGV. Atmospheric moisture feeds along fronts would maintain no dryness/drought. However, fronts with limited moisture followed by prolonged spells of mild to warm weather with low humidity would return dryness (Level “0” of 4) or even moderate drought (Level 1 of 4) by March. Confidence is low on which outcome occurs. Initial dryness in Zapata would spread from the Rio Grande Plains toward the mid-Valley.
- The expectation that El Niño will quickly turn neutral in spring, and possibly flip to La Niña by late spring and early summer, could be a harbinger of more rapid drought development, along with wildfire spread potential increasing, especially if grasses and brush do not fully become moist (“uncured”). April-June would begin a critical period.
- **Severe Weather? March and April** offers the best opportunity, as surface temperatures warm with the sun and instability could increase. However, *much would depend on an active subtropical jet stream linking up with stronger mid-latitude systems*. **A drier pattern, especially in April, would reduce opportunity.** Because of these factors, **confidence is low**. Typical March/April threats would be **hail,** followed by **flooding rain** and **damaging wind**.